

# DuPont™ Teflon® TE 3890

## FLUOROPOLYMER RESIN

### PTFE aqueous dispersion

#### Typical applications

Teflon® TE 3890 is used in the preparation of blends for coating of high performance bearings and seals.

#### Description

Teflon® TE 3890 PTFE aqueous dispersion is a negatively charged hydrophobic colloid, containing PTFE resin particles, 0,05 to 0,5 µm in size, suspended in water. The dispersion nominally contains 35% solids, by weight, and is stabilized with an anionic wetting agent. The anionic wetting agent content is typically 1,8% (by weight of PTFE). The pH of Teflon® TE 3890 is normally about 10.

Teflon® TE 3890 is used for co-coagulation with various fillers to produce products with a range of strengths, porosities, and colours required for numerous applications. Its properties in finished articles include inertness to nearly all chemicals and solvents in commercial use, stability at high temperatures, excellent dielectric properties, the lowest coefficient of friction of any solid material, and unusual non-stick characteristics.

#### FDA compliance

Teflon® TE 3890 is not recommended for use in food contact applications.

#### Processing

Compositions of Teflon® PTFE resins reinforced with inorganic particles, such as graphite and powdered metals, find broad commercial application in mechanical components like bearings and seals. The use of reinforcing agents can offer such advantages as improved resistance to cut-through and abrasion, increased dimensional and form stability, higher rate of heat dissipation, and greater resistance to wear.

Teflon® TE 3890 can also be co-coagulated with special ingredients and formed into flares, flexible explosives and propellants, and fuel cell electrodes. Co-coagulation is accomplished by

chemical addition or mechanical agitation. The viscosity and wetting power of the dispersion can be increased by adding wetting agents, such as anionic or nonionic dispersants (cationic reagents should ordinarily be avoided because they coagulate the dispersion).

#### Safety precautions

Industrial experience has proven that adequate ventilation, in properly maintained processing and handling areas, will eliminate known hazards to personnel.

Resin containers should be opened and used in well-ventilated areas.

Equipment used to process at melt temperatures should be provided with local exhaust ventilation to completely remove all fumes and vapours from the processing area. In addition, care should be exercised to avoid the contamination of cigarettes and other forms of smoking tobacco when using fluoropolymer resins.

**Dispersion may irritate skin and eyes. Avoid prolonged or repeated contact with skin and eyes. Vapours liberated during processing at elevated temperatures may be harmful.**

Wash hands before eating or smoking. In case of contact, flush with water: for eyes, get medical attention.

Before using fluoropolymer resins, read the Material Safety Data Sheet (MSDS) and the detailed information in "Guide for the safe handling of Fluoropolymer Resins" published by APME or the "Guide to the Safe Handling of Fluoropolymer Resins", latest edition, published by the Fluoropolymer's Division of The Society of the Plastics Industry. Copies can be obtained through your local DuPont representative.

#### Storage and handling

Teflon® TE 3890 dispersion will settle on prolonged standing or upon heating above 65°C. It usually can be redispersed by mild agitation. Highspeed stirring, pumping or violent agitation,

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For further information contact  
[www.teflon.com](http://www.teflon.com)

## USA

DuPont Fluoroproducts  
P.O. Box 80713  
Wilmington, DE 19880-0713  
Tel. (302) 479 7731

## Europe

DuPont de Nemours International S.A.  
DuPont Fluoroproducts  
2, chemin du Pavillon  
P.O. Box 50  
CH-1218 Le Grand-Saconnex  
Geneva, Switzerland  
Tel. +44 22 717 51 11  
Telefax +44 22 717 54 11

## Japan

DuPont Mitsui Fluorochemicals Co., Ltd.  
Chiyoda Honsha Building  
5-18, Sarugaku-cho 1-chome  
Chiyoda-ku, Tokyo 101 Japan  
Tel. 81 3-5281-5872

## Asia Pacific

DuPont China, Limited  
26/F., Tower 6, The Gateway  
9 Canton Road, Tsimshatsui  
Kowloon, Hong Kong  
Tel. (852) 27341948  
Tim-S.T.Leung@hkg.dupont.com

## Canada

DuPont Canada, Inc.  
Dupont Fluoroproducts  
P.O. Box 2200, Streetsville  
7070 Mississauga Road  
Mississauga, Ontario, Canada  
L5M 2H3  
Tel. (302) 479-7731

## South America

DuPont do Brasil S/A  
Fluoropolymers  
Alameda Itapecuru, 506  
06454-080 – Alphaville  
P.O. Box 263  
Barueri, Sao Paulo, Brazil  
Tel. 0800-171715  
Produtos.Brazil@bra.dupont.com

and freezing must be avoided because these conditions will cause irreversible coagulation. The dispersion should also be protected from the atmosphere to prevent coagulation by drying.

A low percent solids dispersion like Teflon® TE 3890 will show a faster rate of separation than a high percent solids (60%) dispersion. The separation into a clear upper layer and a PTFE rich lower layer is normal for TE 3890. The material can be homogenized with simple stirring. The rate of irreversible sedimentation is about the

same as for high percent solids dispersions.

The optimum storage temperature range is from 7-25°C. The product should be rolled or stirred gently just prior to use.

Ideally, the dispersion should be conveyed by gravity from storage to processing stations.

## Packaging

Teflon® TE 3890 PTFE aqueous dispersion is packaged in 30 litre drums and 1000 litre containers.

## Typical Property Data for Teflon® TE 3890

Property	Test method <sup>1)</sup>	Unit	Typical value
<b>General</b>			
Solids content (% PTFE by weight)	ISO 12086 D 4441	%	35
Density of dispersion (at 35% solids)	ISO 8962 D 4441	g/cm <sup>3</sup>	1,24
Resin dry weight (at 35% solids)	DuPont	g/l	435
Colour			white
Dispersion particle size, average diameter	ISO 13321	µm	0,22
pH (value) of dispersion	ISO 976 E 70		10
Standard specific gravity of sintered resin	ISO 12086 D 4895		2,225
<b>Other</b>			
Water absorption	D 570	%	<0,01
Weather and chemical resistance			Excellent

**Note:** Teflon® TE 3890 meets the requirements of ASTM D 4441-98, type I, grade 1, class A.  
Typical properties are not suitable for specification purposes.

1) ASTM unless otherwise specified.

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**Caution:** Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement", H-51459.

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